

Pages V. 13.
CONSIDERATIONS
U P O N
LOTTERY SCHEMES
I N G E N E R A L ;

C O N T A I N I N G

A minute Investigation of the real and eventual Profits arising to Lottery Offices, by disposing of their Tickets in Shares and Chances ;

T O G E T H E R W I T H

A full Examination of Mr. MOLESWORTH'S celebrated Schemes for pointing out such fortunately inclined Numbers as tend to the Advantage of those Adventurers who purchase his selected Tickets.

By S A M U E L C L A R K.

L O N D O N :

PRINTED FOR THE AUTHOR;

And Sold by J. MURRAY, near St. Dunstan's Church, Fleet-street ; T. AXTELL, at the Royal-Exchange ; G. LAIDLER, at his Office, Prince's-street, near Leicester-fields, and by the AUTHOR, at his House, No. 18, Charter-house-street.

M D C C L X X V .

TOP SECRET

A N attempt towards fixing the human mind
from knowledge and experience, however it
may prove unproductive is well understood.
In a very large measure, the human mind is
subject to error in its operations, a great deal of
mistake and very probably exists from the
earliest ages of the world. The human mind
and its operations, if we may credit Doctor Brown,
were never intended to be perfect, and are not so
have a great deal of error and imperfection, by the
of irregular and other constitutional operations. For
have been a great deal of error and imperfection
from the very beginning of the world, and it is
the whole of the human mind, the most perfect
operation of the human mind, the most perfect
the mind of the human mind, the most perfect
was intended, it is not intended, leading an
life was made (a human being) on the
of the human mind, the most perfect
not of the human mind, and afterwards leading
life in this.



It is a question only to be settled by
it would be best to settle it, but what
people will do the thing, the thing to
it is a question to much the same. A
operation of the human mind, which seems to favor
operation of the human mind, the most perfect
operation of the human mind, the most perfect
operation of the human mind, the most perfect

P R E F A C E.

AN Attempt towards freeing the human Mind from *Ignorance* and *Superstition*, however it may prove unsuccessful, is most undoubtedly a very laudable Undertaking. Superstition is indeed an Error of long standing, a grey-headed Mistake, and has very probably existed from the earliest Ages of the World. The ancient *Egyptians* and *Chaldeans*, if we may credit *Diodorus Siculus*, were much inclined to this Folly, and are said to have predicted Storms and Earthquakes, by Means of magical and other diabolical Operations. Nor have Men of Sense and Learning been entirely free from Notions of this Kind; even *Augustus*, one of the wisest Men in the World, was the most superstitious of Mortals: “He met,” says *Suetonius*, in the Life of that Emperor, “a Fellow whose Name was *Eutyclus*, (i. e. *fortunate*) leading an Ass, whose Name was *Nicon* (i. e. *Conqueror*) on the Morning of the Battle of *Actium*: He assured himself of Victory upon the Omen, and afterwards dedicated their Statues in Brass,

If Superstition only prevailed over weak Minds, it would be less formidable, but when sensible People fall into this Error, the Danger to Mankind becomes so much the greater. A wrong Interpretation of a Passage which seems to favour and countenance this Belief, has, we believe, contributed

but not a little towards the Propagation of it, we mean the Story of the *Witch of Endor* raising *Samuel* from the Dead, concerning which, as an ingenious Author observes, the Scripture speaks only according to the deceived Apprehensions of *Saul* and his Followers; for neither that Woman, nor all the Devils in Hell, could raise *Samuel*, who had been dead and buried near two Years; nor is it likely that God did then raise *Samuel*, or should refuse to answer *Saul* when he consulted him in Ways appointed by himself, and yet should answer him in a forbidden Way. Besides, if *Samuel* had been raised by the Order of God, no Doubt he would never have said unto *Saul*, *Why hast thou disquieted me?* For it would have been no Disquiet nor Trouble to him to come upon God's Command. The Answer to *Saul* was certainly given by the Woman herself, or a Person confederated with her; and perhaps spoke at a Venture, knowing he was going to Battle, but as for the Certainty of *Saul's* Death, it could not have been predicted or foretold by the Devil himself.

The Havock which has been made among the human Species by punishing with Death those innocent and unhappy Wretches, who, under the Denomination of Witches and Wizards, have been deemed guilty of Crimes which never yet existed in Nature, is too shocking to relate; Oxford, a Place ever famous for Learning, has more than once been a Witness to the Execution of Hundreds for these imaginary Crimes; and who will not be shocked at reading the following Article of News, which we remember to have seen published in the Daily Courant on Friday, September the 6th, 1728, about six Years before the Act in Force against Witch-

Witchcraft was repealed by the *British* Parliament.

“ Letters from *Segedin*, in *Hungary*, of the 26th of *July*, import, that several Persons of both Sexes, convicted of *Witchcraft*, have been condemned to be burnt there; but before they were executed, they put them upon the two following Trials, according to the Custom of the Country; the first was, to tie their Hands and Feet, and throw them into the Water, who, as Sorcerers used to do, swam above Water like a Piece of Cork, after which they were put into Scales, when it appeared that a large Woman weighed but one Ounce, and her Husband, who was somewhat less, weighed but five Drahms, and others were still lighter; whereupon they were burnt alive on the 23d of the said Month, upon three large Heaps of Wood, having Posts set up in the Middle, to which those miserable Wretches were tied. There was among them a Midwife, who had baptised 200 Children in the Name of the Devil; and a Man of 82 Years, who was formerly a Judge of that Town.”

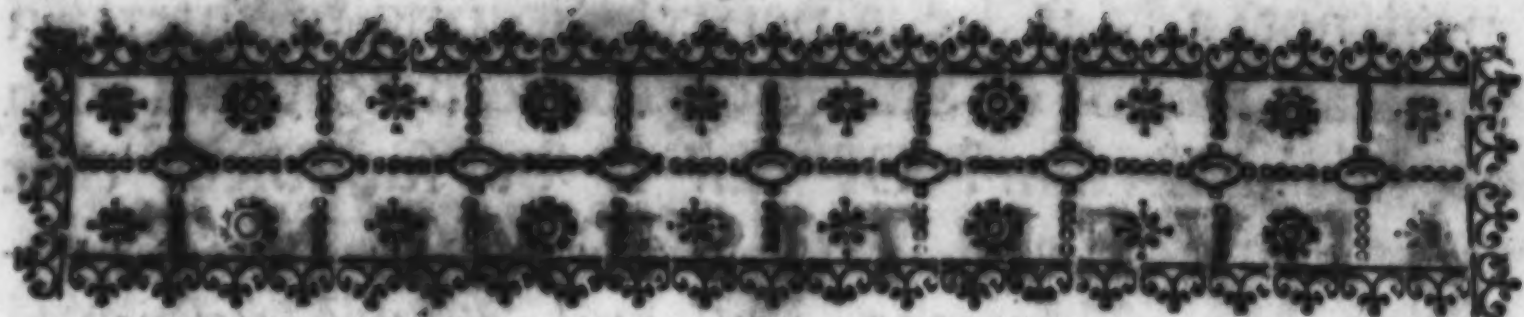
This infernal Practice of destroying the ignorant and harmless Part of Mankind, has been long since laid aside in *England*, and it is now generally believed that Witches and Wizards were most of them drove from us by the *Reformation* in the Time of *Henry VIII.* and quite extirpated by the more glorious *Revolution* under King *William III.*

ADVERTISEMENT

ON the Evening of each Day, during the Drawing of the present Lottery, will be published, at a very inconsiderable Price, some necessary and interesting Particulars relating to Lottery Business in general; calculated for the Benefit of the Adventurers therein, and founded upon a Plan entirely different to any Thing of the Kind ever yet offered to the Public.

N. B Every Copy of this Pamphlet will be signed by the Author's own Hand.

C O N:



CONSIDERATIONS

UPON

LOTTERY SCHEMES, &c.

JOHN MOLESWORTH, Esq; the celebrated Lottery Calculator, who, for several Years past, has obliged the Public with repeated Assurances of being able to select from each Lottery, previous to the drawing, such a set of Numbers, as shall contain more capital Prizes than any other equal Set, throughout the whole Number of Tickets contained in the said Lottery, informs us, " That " in the last Lottery, a Book, containing two " Hundred and Ninety-six selected Numbers, delivered to and sealed by Mr. Alderman Bull, " previous to the drawing, produced as many " capital

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“ capital Prizes as should fall to three Thousand
 “ promiscuous Tickets.” Now, gentle Reader,
 must not a Man be a perfect Sceptic to entertain
 the least Doubt or Suspicion concerning the Truth
 of this Assertion? Or can it be supposed, that
 there could be any, even the least Collusion, be-
 tween Mr. Alderman *Bull* and *John Moleworth*,
 Esq; in order to impose upon or deceive the Pu-
 blic? Certainly not! and therefore, what is re-
 ported from No. 67, *Holborn*, No. 30, *Fleet-street*,
 or No. 34, in *King-street*, *Cheapside*, viz. “ For
 “ seven Lotteries past, the Success of Mr. *Mole-*
 “ *worth's* Numbers, let it arise from what Cause
 “ it will, has been prodigious, and cannot be
 “ controverted by the most zealous Advocate
 “ against his Doctrine of Calculations, as it is au-
 “ thenticated by Persons of the first Rank and
 “ Character, amongst whom are the Right Hon.
 “ *Brass Crosby* and the Right Hon. *Frederick Bull*,
 “ Lord Mayors of the City of *London*,” must be
 indubitably true. But however, without retract-
 ing our belief of these, so well attested Proofs of
 the celebrated Calculator's Predictions, we shall
 now take the Liberty to form some Conjectures
 concerning the Means by which this very extraor-
 dinary Person has acquired such a happy and tran-
 scendant Knowledge, beyond (we verily believe)
 the Reach of any other human Being upon the
 Surface of this terraqueous Globe. First, then,
 let us suppose that Mr. *Moleworth* has a greater
 Share of good Luck allotted to him, than is usually
 devolved upon other Mortals (we mean of those
 who deal in Lottery Tickets) yet if this be admit-
 ted, does it follow that he can communicate this
 good Luck to others; if he cannot, it is certainly
 of no Use to any but himself; but there is still a
 much

much greater Obstacle to surmount, which is, to prove that there is any such Thing in the World as Luck, either good or bad; the most eminent Writers upon the Laws of Chance utterly deny the Existence of such a Principle, and Men of the most refined Understandings do, at this Time, universally explode it.

There is, says a late ingenious Writer upon this Subject, a Kind of Superstition, which has been of long Standing in the World, viz. that there is in Play such a Thing as Luck, good or bad. I own, continues this Author, there are a great many judicious People, who, without any other Assistance than their own Reason, are satisfied, that the Notion of Luck is merely chimerical; yet I conceive that the Ground they have to look upon it as such, may still be enforced from some of the following Considerations:

If, by saying that a Man has good Luck, nothing more was meant, than that he has been generally a Gainer at Play, the Expression might be allowed as very proper in a short Way of speaking; but, if the Words GOOD LUCK be understood to signify a certain predominant Quality, so inherent in a Man, that he must win whenever he plays, or at least win oftner than lose, it may with Safety be denied that there is any such Thing in Nature.

Secondly, Let us see what the occult Sciences, by some called Astrology, or in the more vulgar Acceptation of the Word, Conjuratation, will do for us, in order to account for this surprizing Phenomenon of intuitive Knowledge in future Events. Here, as in the former Case, we shall find scarce

any Thing to our Purpose; for Astrology, as practised by pretended Fortune-Tellers, has been long since banished from among the Learned. *Barclay*, in his *Argenis*, *Lib. 2*, has ridiculed, with much Pleasantry, this fallible Science, on Account of an Astrologer who had undertaken to instruct King *Henry III.* of *France*, in the Event of a War then threatened by the Faction of the *Guises*.

“Supposing, withal (says this ingenious Writer) the Face of the Heavens accurately known, whence arises this Dominion of the Stars over our Bodies and Minds, that they must be the Arbiters of our Happiness, our Manner of Life and Death? Were all those who went to Battle, and died together, born under the same Position of the Heavens? and when a Ship is to be cast away, shall it admit no Passengers but those doomed by the Stars to suffer Shipwreck? Or rather, do not Persons born under every Planet go into the Combat, or aboard the Vessel, and thus, notwithstanding the Desparity of their Birth, perish alike. Again, all who were born under the same Configuration of the Stars do not live and die in the same Manner. If a Man meet a Robber, you will say he was doomed to perish by a Robber's Hand; but, did the same Stars, which, when the Traveller was born, subjected him to the Robber's Sword, did they likewise give the Robber, who perhaps was born long before, a Power and Inclination to kill him? for you will allow, it is as much owing to the Stars that the one kills, as that the other is killed. And when a Man is overwhelmed by the Fall of a House, did the Walls become faulty, because the Stars had doomed him to die thereby; or rather, was not his

Death owing to this, that the Walls were faulty? The same may be said with regard to Honours and Employments, because the Stars that shone at a Man's Nativity promised him Preferment, could those have an Influence over other Persons not born under them, by whose Suffrages he was to rise? Or how do the Stars at one Man's Birth annul or set aside the contrary Influences of other Stars, which shone at the Birth of another?

"You boast much of the Event of a few Predictions, which, considering the multitude of those your Art has produced, plainly confess its Imperinency. A Million of Deceptions are hidden and forgot, in favour of some eight or ten Things which have succeeded. Out of so many Conjectures, it must be preternatural if some did not hit; and it is certain, that, considering you only as Guessers, there is no Room to boast you have been successful therein. Do you know, says *Barclay* to the Astrologer, what Fate awaits *France* in this War, and yet are not apprehensive what shall befall yourself? Did you not foresee the Opposition I was this Day to make to you? If you can say whether the King shall vanquish his Enemies, find out first whether he will believe you."

If the Foreknowledge of Things, or of what will happen at some future Period of Time, cannot be obtained in a natural Way, nor by any astrological Operations, as is clearly proved by the above Quotations from *Barclay's* Treatise aforementioned, it must certainly follow, that those Persons (if any) who possess this Kind of Prescience, must have received it either by an immediate Gift from Providence, or by some Sort of Inspiration of which

which the human Mind can form no probable Conjecture. If, on the other Hand, we content for mere Chance being capable of producing this wonderful Effect, we shall soon be convinced of the Mistake, by adverting to the Definition of the Word Chance, which is indeed no more than a Term we apply to Events, to denote that they are not necessarily produced as the Effects of any proper Cause; and therefore, if by the Intervention of other Causes we are not aware of, an Effect be produced, different from what was supposed intended, we say the Effect was produced by Chance, which Word, when personified and erected into a chimerical Being, coincides with the *Fortuna* of the Ancients.

The Method of deciding dubious Cases, where there appeared no Ground for a Preference, by *Lots* or *Chances*, is undoubtedly of great Antiquity. In the Old Testament we meet with divers standing and perpetual Laws; and particular Commands, prescribing and regulating the Use thereof. History makes mention of several Kinds of Decision by *Lots* or *Chances*, which were in use among the ancient Heathens, under the general Name of *Sortes*, and by them divided into different Classes, as the *Sortes Prænestinae*, the *Sortes Homericae Virgilianæ*, &c. the former of these were famous among the *Greeks*, and was performed by Means of a great Number of Letters, or even whole Words put into an Urn, then after being well mixed, by shaking them together, and thrown out, whatever should chance to be made out in the Arrangement of the Letters, &c. composed the Answer of this Oracle. To this succeeded the other Kind of *Sortes* abovementioned, called *Homerica* or *Vir-*

Virgiliana; the Method of these was, to take some celebrated Poet, as *Homer*, or *Euripides*, or *Virgil*, to open the Book, and whatever first presented itself to the Eye upon opening, was taken for the Ordinance of Heaven. This Superstition passed hence into Christianity; and the Christians took their *Sortes* out of the Books of the Old and New Testament. The first Passage that presented itself upon opening a Book of Scripture, was esteemed the Answer of God himself. If the first Passage did not happen to be any Thing to the Purpose for which the *Sortes Sanctorum*, as it was now called, were consulted, another Book was opened; 'till a Passage was met withal that might be taken for an Answer.

St. *Augustine* does not disapprove of this Method of learning Futurity, provided it is not used for worldly Purposes; and owns he has practised it himself. *Gregory of Tours* adds, that the Custom was, first to lay the Bible on the Altar, and to pray the Lord that he would discover by it what was to come to pass; other Instances of the Use of the *Sortes Sanctorum* are very frequent in History. *Heraclius*, Mr. *Fleury* tells us, in his War against *Cosroes*, to learn where he should take up his Winter Quarters, purified his Army for three Days, and then opened the Gospels, and found the Place appointed for his Winter Quarters was in *Albania*. However this Kind of Divination, by the *Sortes Sanctorum*, might have been in use among the primitive Christians, they were most certainly condemned by the Council of *Agda*, in 506, at the Time they were beginning to take Footing in *France*.

We now apprehend our Readers are, from what has already been said on this Subject in the preceding Pages, pretty well convinced that the celebrated Investigator of these *Golden Numbers*, so much insisted upon by the Proprietors of the MOLESWORTHEAN Scheme, is not indebted for his superlative Knowledge in these Matters, to any diabolical, magical, astrological or preternatural Intelligence whatsoever, in short, that he cannot justly be deemed a Conjuror,, and consequently not (we hope) eligible to that Sort of Punishment, which may lawfully be inflicted upon all those who practise (or pretend to do so) Divination, by aerial Commerce with Dæmons or other wicked Spirits. It now only remains to enquire whether this Kind of Knowledge in *selecting such Numbers* (in a Lottery) *as shall contain more Prizes, than an equal Number of such Tickets taken promiscuously*, and for which our Calculator is so eminently distinguished, may not be attained by deep Researches into the Doctrine of Chances, as founded upon the most evident and immutable Principles in mathematical Disquisitions, without having Recourse to any such other Means (if they really still exist) as are above-mentioned. In order to this, it may not be improper just to give our Readers, especially those who have not made this Subject their peculiar Study, some little Insight into the Principles thereof, whereby they may be enabled to understand what is generally meant by calculating according to the Laws of Chance; thus, in speaking of the Likelihood of an Event happening or failing, we say the Probability of its happening is to the Probability of its failing, as the Number of different Ways by which it can happen, to the Number of different Ways by which it can fail.

Thus

Thus, if I have four Chances for winning Ten Pounds, and four Chances whereby I may not win any Thing, my Expectation will, in this Case, be worth Five Pounds, it being an equal Chance whether I get Ten Pounds or nothing; and consequently, if a Person was to purchase my Expectation, he ought to give me Five Pounds for it. Again; suppose a Person holds a certain Sum of Money in each Hand, and I am to chuse which Hand I will, I say the Value of my Expectation is, in this Case, Half the Sum of Money held in both Hands; for suppose Five Pounds in one Hand, and Seven in the other, then it is evident I have an equal Chance for either Five Pounds or Seven, wherefore my Expectation is evidently worth Six Pounds. If I have five Chances to gain Ten Pounds, and three Chances to fail thereof, then the real Value of my Expectation will arise by dividing Ten Pounds into two Parts, in the Ratio of five to three, and taking the greater Part, viz. Six Pounds Five Shillings, which is the Value required. See *Clark's Laws of Chance*, Art. 1, of the Introduction.

What we have already advanced concerning the Improbability, or rather the Impossibility, of such an existing Principle as Luck, either good or bad, is farther illustrated by that late excellent Mathematician, Mr. A. DEMOIVRE, in the Preface to his *Doctrine of Chances*, where it is observed, "That the Asserters of Luck are very sure, from their own Experience, that at some Times they have been very lucky, and that at other Times they have had a prodigious Run of Ill-Luck against them; which, whilst it continued, obliged them to be very cautious in engaging with the Fortunate ;

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nate; but how Chance should produce those extraordinary Events, is what they cannot conceive. They would be glad, for instance, to be satisfied how they could lose fifteen Games together at Piquet, if Ill Luck had not strangely prevailed against them. But if they were acquainted with Calculations of this Kind, they might see, that tho' the Odds against their losing so many Times together be very great, viz. 32767 to 1, yet the Possibility of it is not destroyed by the greatness of the Odds, there being one Chance in 32768 that it may so happen; from whence it follows, that it was still possible to come to pass, without the Intervention of what they call Ill Luck. Nor is it to be imputed to Ill Luck, any more than the winning, with one single Ticket, the highest Prize in a Lottery of 32768 Tickets is to be imputed to Good Luck, since the Chances in both Cases are perfectly equal. But if it be said, That Luck has been concerned in this latter Case, the Answer will be easy; for let us suppose Luck not existing, or at least let us suppose its Influence to be suspended, yet the highest Prize must fall into some Hand or other, not by Luck (for by the Hypothesis *that* has been laid aside) but from the mere Necessity of its falling somewhere."

Those who contend for Luck, may, if they please, alledge other Cases at Play, much more unlikely to happen than the winning or losing fifteen Games together; yet still their Opinion will never receive any Addition of Strength from such Suppositions; for, by the Rules of Chance, a Time may be computed, in which those Cases may as probably happen as not; nay, not only so, but a Time may be computed in which there may

may be any Proportion of Odds for their so happening.

But supposing that Gain and Loss were so fluctuating, as always to be distributed equally, whereby Luck would certainly be annihilated; would it be reasonable, in this Case, to attribute the Events of Play to Chance alone? On the contrary, it would be quite otherwise; for then there would be more Reason to suspect that some unaccountable Fatality did rule in it. Thus, if two Persons were agreed to throw up a Shilling, or other Piece of Money, by way of Cross and Pile, and Chance alone supposed to be concerned in regulating the Fall of the Piece, is it probable that there should be an Equality of Heads and Tails, or Crosses? It is five to three that in four Times there will be an Equality; it is eleven to five in six Throws, 93 to 35 in eight, and about twelve to one in a hundred Trials; wherefore Chance alone, by its Nature, constitutes the Inequalities of Play, and there is no need to have Recourse to Luck to explain them.

Among the several Mistakes that are committed about Chance, one of the most common, and least suspected, Mr. *Demoivre* remarks, is that which relates to Lotteries. Thus, supposing a Lottery, wherein the Proportion of the Blanks to the Prizes is as five to one, it is very natural to conclude, that therefore, five Tickets are requisite for the Chance of a Prize; and yet it may be proved, demonstratively, that four Tickets are more than sufficient for that Purpose, which will be confirmed by often repeated Experience. In like Manner, supposing a Lottery, wherein the Proportion of the Blanks to

the Prizes is as thirty-nine to one, it may be proved, that in twenty-eight Tickets, a Prize is as likely to be taken as not; which, although it may seem to contradict the common Notions, is nevertheless grounded upon infallible Demonstration, as shall be shewn when we come to an Examination of the Schemes proposed to the Public, by some of the most eminent Lottery Office Keepers in this Metropolis.

By the Play of the Royal Oak, many Years since in use, some Persons who lost considerably by it, had their Losses occasioned by an Argument of which they could not perceive the Fallacy. The Odds against any particular Point of the Ball were thirty-one to one, which intitled the Adventurers, in case they were Winners, to have thirty-two Stakes returned, including their own; instead of which, they having but twenty-eight, it was very plain, that on the single Account of the Disadvantage of the Play, they lost one eighth Part of all the Money they had plaid for. But the Master of the Ball maintained, that they had no Reason to complain, since he would undertake that any particular Point of the Ball should come up in twenty-two Throws; of this he would offer to lay a Wager, and actually laid it when required. The seeming Contradiction between the Odds of thirty-one to one, and twenty-two Throws for any Chance to come up, so perplexed the Adventurers, that they began to think the Advantage was on their Side, for which Reason they plaid on, and continued to lose.

From this short Specimen of the Nature and Properties of the Laws of Chance, it will, in some Measure, appear evident to our Readers, that the
deepest

deepest Knowledge in this Science, cannot possibly enable a Man to form just Predictions, with regard to such Tickets as shall prove more fortunate than others; for this Reason we shall wave all farther Attempts to explore the *rationale* of the most wonderful Foresight that ever has been possessed (we really believe) by any Man, except Mr. *Molesworth*, since the Time of inspired Writers: but what renders this Affair still more amazing is, that the celebrated Calculator was scarce fourteen Years old when he first gave the Public a Proof of his Knowledge in this Arithmetic of pure Intelligences; for, by a Print, exhibited at the Shops, of this extraordinary Person, it appears, if we mistake not, that his Age in 1774, was about 21; and consequently, when in tender Years, even before he had attained the State of Adolescence, he must have been in full Possession of this surprizing Art.

Should this small Tract fall, by Accident, into that young Gentleman's Hands, he will doubtless retort upon us, by saying, That, according to the System we have already adopted, there being any Number of Chances, however great, against the Probability of this happening, to one in its Favour, does not, by any Means, destroy the Possibility of the Case; this we are most certainly obliged to grant, and therefore, in all that follows, we shall take the Liberty to consider Mr. *Molesworth* but as a mere Man, although, perhaps, deeply skilled in Calculations of the most difficult Kind, and, upon this Principle, endeavour to point out to our Readers, the Advantages (if any) which may arise to the Adventurers in the present Lottery, who purchase Tickets where his Schemes are particularly attended

attended to. This will naturally lead us to examine, with consistent Freedom, very minutely into the Validity of those Schemes, and how far they may, or may not, claim Superiority to others, which are daily circulated from different Quarters of the Town; these, indeed, are so nearly alike among themselves, that a very few Observations concerning them will be sufficient; but with regard to the former, we must be more minute in our Inquiries, being fully resolved to leave our Readers in no Doubt whether the Proprietors will be able to fulfil their Engagements (the contrary having, we hear, been suspected) for notwithstanding the Proposals in the *Malabar* Schemes are so replete with seeming advantageous Terms, we hope to make it appear, in the Course of this Performance, that they might have offered yet more, without any Danger of being Losers by the Contract.

Before we enter upon this Part of our Work, it may not be improper to mention a few Particulars, relating to the present Lottery, whereby the Adventurers therein may be able to form a general Idea, not only of the Terms upon which they risk their Money, but likewise, how far they may reasonably expect to be Gainers by making the Purchase.

The present Lottery, as set forth by Authority of Parliament, and which consists of 60,000 Tickets, is to begin drawing on November the 13th, 1775. These Tickets are delivered out to those Stockholders who have subscribed towards the Diminution of the national Debt, by such Means as the Act for that Purpose prescribes. The Price of

each Ticket to such Subscriber, and therefore 60,000 Tickets amount to 750,000 Sterling, of this Sum 150,000 is to be retained for the Use of Government, and the Residue, viz. 600,000. to be distributed into Prizes thus: 2 of 20,000 l. each, 6 of 10,000 l. each, 8 of 5,000 l. each, 18 of 2,000 l. each, 36 of 1,000 l. each, 60 of 500 l. each, 300 of 100 l. each, 870 of 50 l. each, and 18,700 of 15 l. each. Moreover, the first drawn Ticket for each of the three first Days of drawing of the said Lottery, shall be intitled to 1000 l. and the last drawn Ticket shall likewise be intitled to the Sum of 1000 l. over and above the Benefits which may happen to belong to the four last mentioned Tickets. The Act of Parliament which authorizes this Lottery, does not direct in what Manner the last drawn Ticket is to be determined, whether by drawing out all the Tickets in each Wheel, or otherwise; but, by what we have seen in some former Lotteries, the Method seems to be this; when all the Prizes are come up, which is likely to happen before all the Tickets in the Number Wheel are drawn out, then one more Ticket from each Wheel is taken, and the Number so drawn (which must be a Blank) is entitled to 1000 l. as being the last drawn Ticket, which, by this Method of determining the last drawn Ticket, cannot possibly be also any other Prize, unless such Prize remain in the Wheel (which is very improbable) until all the other Tickets, Blanks and Prizes, are come up, and by this Means become the last drawn Ticket. The Number of Prizes, excluding the four abovementioned, in this Lottery, is 20,000, and consequently 40,000 Blanks, which makes exactly two Blanks to one Prize; but upon Account of the said four Prizes of 1,000 each, that Proportion

is

is in some, very small, Degree altered, yet not of sufficient Consequence to merit a Calculation about it.

We shall now proceed to examine Mr. Moleworth's Scheme of Proposals to the Public, concerning the present Lottery, contained in the following very extraordinary Advertisement:

“ STATE LOTTERY, 1775.

“ OFFICES, No. 67, Holborn, No 30, Fleet-street, and No. 34, King-street, Cheapside.

“ A DEMONSTRATION of the real and actual Advantages attending Mr. Moleworth's selected Numbers, approved of by the most eminent Mathematicians, and obvious to every Capacity, with an Account shewing the Success of the Calculations in the seven last State Lotteries.

“ TWO THOUSAND POUNDS, instead of only One Thousand to which it is entitled,

“ WILL be paid for the last drawn Ticket, and in Proportion for Shares and Chances, if signed or indorsed by John Moleworth, Esq; and for the absolute Security of the Public, the Money for this Purpose is now deposited in the Hands of Mess. Dorrien, Ruckers, Dorrien and Martin, Bankers, in Finch-Lane, Cornhill.

“ Nor is this valuable Addition the only Consideration to the Adventurer, for from the advanced Price which Mr. Moleworth's Tickets will certainly bear towards the Conclusion of the drawing, the

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Proprietors are enabled to engage to give Twenty Pounds for every such Ticket remaining in the Wheel the last Day of drawing, and in Proportion for Shares, with this Proviso, that they are tendered to them at or before Six o'Clock the preceding Evening. This Circumstance creates fifteen Hundred Prizes of Twenty Pounds more than are contained in the Scheme of the Lottery, and renders these Tickets by ten Shillings each more valuable than others. The capital Prize to the last drawn Ticket is also well worth the Attention of Purchasers of Chances and Shares of Chances for the Prizes above fifteen Pounds.

“ It has been found by repeated Experience, that four of Mr. Molesworth's Numbers have constantly equalled five promiscuous ones for capital Prizes: and to convince the Public, that this Advantage is not merely speculative, the Proprietors do engage that any Person purchasing thirty-five Numbers, shall, without any extraordinary Charge, have a Fifty Pounds Prize or upwards, notwithstanding that according to the Chance of the Lottery, not less than forty-six Tickets are entitled to such Prize.

“ And although in the present Lottery, there are exactly two Blanks to a Prize, all Purchasers of two or more Tickets or Shares not lower than Sixteenths, shall be absolutely warranted to have but one Blank to a Prize, and that in such Manner, that they shall either gain thirty Shillings upon, or save twenty Shillings in the Purchase of each; which eventual Deduction is immediately made upon any even Number of Shares, now selling as under,

| | | | | |
|---------------------|---|----|---|-------|
| Two or more Halves, | 6 | 3 | 0 | |
| Ditto Quarters, | 3 | 3 | 0 | |
| Ditto Eighths, | 1 | 11 | 6 | each. |
| Ditto Sixteenths, | 0 | 16 | 0 | |

Any even Number of whole Tickets at **Thirteen Pounds eighteen Shillings each**, will entitle the Holder to **Forty Shillings** for each Blank, if they do not produce as many Prizes as Blanks; or any responsible Person may have them delivered at **eleven Pounds eighteen Shillings each**, on giving their Engagement to pay the Difference if their Success is answerable to these Proposals.

“ N. B. This Computation is made from the present Price of Tickets, **12l. 18s. 6d.** and will be varied as they rise or fall.

“ In order to prove the real Advantages of these Proposals, the following Calculations are submitted to the Reader:

“ The present State Lottery consists of **60,000 Tickets**, **20,000** of which are Prizes amounting to **600,000l.**

“ To produce as many Prizes as Blanks, there must be **30,000 Prizes**, consequently **10,000** additional ones, which, only of **Fifteen Pounds each**, amount to **150,000l.**

“ Divide **150,000l.** by **60,000**, the Number of Tickets in the Lottery, and it appears that the Price of the Tickets must be encreased **2l. 10s. each**, to gain this Advantage, which is intrinsically worth that Sum. If the warranted Tickets and

Shares

Shares produce these fifty Shillings per Ticket, they cost the Adventurer twenty Shillings more than the current Price, and leave a Ballance of thirty Shillings each in their Favour. But if they are not attended with such Advantage, they are rated Twenty Shillings each lower than the current Price; consequently there are either Thirty Shillings gained, or Twenty Shillings saved. It is also to be observed, that no farther Advance is required if they are all Prizes; and if the Calculation was merely ideal, and Mr. Moleworth's selected Numbers of no greater Value than promiscuous ones, the Proprietors, by selling Tickets upon these Terms, must (upon the whole Lottery) lose 20,000/.

“ It has been argued, that if Mr. Moleworth knew the Tickets which were to be drawn Prizes, he would keep them himself; if that was the Case, most undoubtedly he would; but he has repeatedly declared that he could only point out Numbers that, upon the whole Amount, would prove more successful than the Chance of the Lottery; which being, in itself, more than Fifty per Cent. against an Adventurer in any Number of Tickets within the Compass of a moderate Fortune; the Disadvantages may be considerably reduced, without a Certainty of gaining any Thing.

For Example, suppose a Person purchases twenty Tickets in the present Lottery, amounting, at the average Price, to 260/. admit that Mr. Moleworth can even insure twelve Prizes, that is, three Prizes to two Blanks, instead of two Blanks to one Prize; will it be denied that this is a very great Advantage? and yet twelve Prizes of 15/ are only 180/, which

deducted from 260l. the Price of the Tickets, leaves a Loss of 80l.

"In the last Lottery, &c."

"It may not be improper to lay before the Public, an exact List of all the capital Prizes which have fallen to the selected Numbers, and if the Sale of one capital Prize, can be deemed a sufficient Reason to prefer an Office, these Tickets, while it is allowed they can be no worse, must be admitted to have hitherto been more fortunate than others."

"List of Prizes from 5,000l. to 20,000l. in Mr. Moleworth's Calculation on the following Lotteries."

| | | | | | | | | |
|-----------------------|-------|---------------|-----------------------|---------------|--------|-----------------------|-------|--------|
| Lottery 1767. | | Lottery 1768. | | Lottery 1769. | | | | |
| No. | 3379 | £20000 | No. | 29749 | £20000 | No. | 42903 | £20000 |
| | 3570 | 10000 | | 19384 | 10000 | | 30672 | 10000 |
| | 30540 | 10000 | | 29802 | 10000 | | 50393 | 10000 |
| | 58956 | 10000 | | 42630 | 10000 | | 54666 | 10000 |
| | 22242 | 5000 | | 58169 | 10000 | | 55719 | 10000 |
| | 22243 | 5000 | | 33442 | 5000 | | 5472 | 5000 |
| and 42 Prizes of from | | | 45345 | | 5000 | 27696 | | 5000 |
| 500l. to 2000l. be- | | | 58403 | | 5000 | 28229 | | 5000 |
| ing in all 48 out of | | | 59473 | | 5000 | 33309 | | 5000 |
| 78 capital Prizes. | | | and 47 Prizes of from | | | and 45 Prizes of from | | |
| | | | 500l. to 2000l. be- | | | 500l. to 2000l. be- | | |
| | | | ing in all 56 out of | | | ing in all 54 out of | | |
| | | | 80 capital Prizes. | | | 82 capital Prizes. | | |
| Lottery 1770. | | Lottery 1771. | | Lottery 1772. | | | | |
| No. | 10296 | £20000 | No. | 29266 | £20000 | No. | 345 | £20000 |
| | 14328 | 20000 | | 19309 | 20000 | | 31048 | 20000 |
| | 6616 | 10000 | | 43287 | 10000 | | 1821 | 10000 |
| | 17205 | 10000 | | 5153 | 5000 | | 50066 | 10000 |
| | 47935 | 10000 | | 25872 | 5000 | | 3343 | 5000 |
| | 7830 | 5000 | | 19896 | 5000 | | 11413 | 5000 |
| | 9783 | 5000 | and 45 Prizes of from | | | 35578 | | 5000 |
| | 11147 | 5000 | 500l. to 2000l. be- | | | and 48 Prizes of from | | |
| | 32297 | 5000 | ing in all 50 out of | | | 500l. to 2000l. be- | | |
| and 43 Prize of from | | | 72 capital Prizes. | | | ing in all 55 out of | | |
| 500l. to 2000l. be- | | | | | | 88 capital Prizes. | | |
| ing in all 52 out of | | | | | | | | |
| 72 capital Prizes. | | | | | | | | |

See the Paragraphs marked by inverted Commas, Page 1 and 2.

The Calculation did not contain quite Half the Numbers in the above Lotteries; the Prizes of 5,000*l.* to 20,000*l.* were sixty-two in Number and 500,000*l.* in Value, of which forty-six in Number (more than three to one) fell to the selected Tickets.

The Number of capital Prizes of 500*l.* and upwards was 472, 315 of which were in the Calculation.

In the last Lottery, 1774, Mr. Moleworth, previous to the drawing, sealed and delivered to Mr. Alderman Bull, a Book containing 296 Numbers, upon the Event of which he not only staked his Reputation, but a considerable Sum of Money; the Event justified his Assertions, for they produced as many capital Prizes as 3000 promiscuous Numbers are entitled to. The original Book, signed and authenticated by Mr. Bull, and other respectable Gentlemen, may be seen on Application at the Offices,

The Wheels by which Mr. Moleworth proves his Calculations cost upwards of 400*l.* and his other Expences upon the Subject have exceeded 1000*l.* Notwithstanding which, the Purchasers of single Tickets, Shares and Chances, have them as cheap as they are sold any where; and actually adventure on the same Chance as if the Lottery contained one fifth more capital Prizes, besides being entitled to 1500 additional Prizes of 20*l.* with 2000*l.* for the last drawn. The Purchasers of two, or any even Number of warranted Tickets or Shares, have a full Proof of the Reality of the Calculations, in possessing an actual, not a speculative, Advantage, as it demonstrated that they must

must gain *Thirty* or save *Twenty Shillings* upon each
 Ticker. One hundred Tickets, at One Pound

| Scheme of the State Lottery, 1775. | | | | Price of Single Shares. | |
|------------------------------------|----|--------|--------|--------------------------------------|----------------|
| Which will begin drawing on Monday | | | | Half | 2 - 3 13 6 |
| the 13th of November. | | | | Quarter | 1 - 3 8 0 |
| 2 Prizes of £10000 | is | £40000 | | Eighth | 1 - 3 4 0 |
| 6 | - | 10000 | 60000 | Sixteenth | 0 - 17 6 |
| 8 | - | 5000 | 40000 | Thirty-second | 0 - 9 0 |
| 18 | - | 2000 | 36000 | Sixty-fourth | 0 - 4 6 |
| 36 | - | 1000 | 36000 | | |
| 60 | - | 500 | 30000 | | |
| 300 | - | 100 | 30000 | Price of Chances exclusive Prizes of | |
| 870 | - | 50 | 43000 | Fifteen Pounds. | |
| 18700 | - | 15 | 280500 | | |
| 20000 Prizes. | | | | Whole Chance | £. s. d. 9 0 0 |
| First drawn first three | | | | Half | 4 12 0 |
| Days 1000 each | | | | Fourth | 2 7 0 |
| 40000 Blanks. | | | | Eighth | 1 4 6 |
| Last drawn 1000 | | | | Sixteenth | 0 12 6 |
| 60000 Tickets. | | | | Thirty-second | 0 6 6 |
| | | | | Sixty-fourth | 0 3 6 |

" The Tickets, Shares and Chances, entitling
 Adventurers to the above Advantages, far supe-
 rior to any Thing ever offered to the Public, are
 now delivering at the Offices, No. 67, *Holborn*,
 No. 30, *Fleet-street*, and No. 34, *King-street, Cheap*
side, the Proprietors of which think it necessary to
 observe, that every Ticket, Share or Chance, if-
 sued by them, is either signed or indorsed by *John*
Molesworth, Esq; the Author of the Calculation.

" If any Part of the above Explanation is not
 sufficiently understood, It is requested Applica-
 tion may be made to the Offices, where every Sa-
 tisfaction will be given.

" As a farther and incontrovertible Proof how
 much the warranted Tickets are really in favour of
 the Adventurer, the Public are requested to ob-
 serve, that any Person who sold the promiscuous
 Numbers upon the same Terms, must lose 34/- in
 in every hundred Tickets. For Example,

One

to give them

One hundred Tickets, at One Pound Premium each, warranted to produce one Blank to a Prize, or Forty Shillings to be paid for each Blank, amount to 100l. Advance. Sixty-seven Blanks, (Two to One) the Proportion of 100 promiscuous Numbers, to be paid for at Two Pounds each, are - - - £134
Premium as above - - - 100

Balance against the Seller - - - 34

" If any Office Keepers, or others, chuse to sell in the same Manner, the Proprietors of Mr. Moleworth's Calculation will themselves purchase as many Tickets as they wish to dispose of.

N. B. As all fortunate Shares must come to the Hands of the Proprietors to be paid, they deduct the Two Pounds to be paid for each Blank, if more than one to a Prize, to lessen the First Cost to the Adventurer, and trust to their Success to indemnify themselves.

As the three Offices above-mentioned transact their Lottery Business intirely upon the Moleworth's Plan, we may reasonably consider them as consolidated; and consequently, as appertaining to the same Proprietary; we may likewise farther suppose, that at the Time of opening those Offices for negotiating Lottery Affairs, the Proprietors were in Possession of some certain Number of Tickets taken promiscuously; in this Case the Purchasers of Tickets, Shares, or Chances of these Offices, would reap no Advantage beyond what might be expected to arise from an equal Purchase made at any other Lottery Office, where Mr. Moleworth's Plan is not particularly attended to.

Our

Our Reader will please to remember, that hitherto we have nowhere delivered an entire Disbelief of this Gentleman's Doctrine of Lottery-Tickets; notwithstanding we may have sometimes expressed ourselves as doubtful concerning the Truth of it; upon which Account we shall therefore think ourselves justified in advertiing to a seeming Difficulty which has occurred to us, upon examining the List of selected fortunate Numbers, in some former Lotteries, as published in the above Advertisement; and it is this: Admitting Mr. Moleworth, by his unparalleled Skill in this Art, capable of pointing out the Numbers of 3000 (or any other Quantity) of Tickets, as shall prove more fortunate than any other 3000 in the whole Lottery, how he could possibly come by them!

If we attempt to obviate this Difficulty upon the Principles of the Laws of Chance, we shall have Probability greatly against us, for the Number of different 3000 that can be taken in 60000, is expressed by
$$\frac{n \times n - 1 \times n - 2 \times n - 3, \text{ \&c.}}{1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7, \text{ \&c.}}$$
 continued to p Terms. Where n is expounded by 60000 and p by 3000, which being actually brought into Numbers, would shew that the odds against taking an assigned 3000 Numbers from a Parcel consisting of 60,000 Tickets is almost infinite, the Ratio between the Failing and Happening of that Event being far beyond Fifty Hundred Thousand Millions to Unity; and therefore granting, that Mr. Moleworth can even ascertain a List of such required Numbers; yet, nevertheless, it would seem to be next to impossible, that they should fall to the Share of any particular Set of Adventurers agree-

agreeing among themselves, to purchase 3000 Tickets in a Lottery, by the usual Method of subscribing towards the required Loan; for it cannot be reasonably supposed, that a Subscriber, when he applies to the proper Office where the Tickets are delivered out, can be supplied with selected Numbers, especially for so large a Quantity as two or three Thousand Tickets; on the contrary, we are rather inclined to imagine they are distributed in the most promiscuous Manner that may be; and indeed for a very obvious Reason, which is, that the Clerks appointed for that Purpose being utterly ignorant of there being any Kind of Difference in the Tickets before their Fate shall be determined by the Wheels of Fortune, they would naturally, to avoid an infinite Deal of Trouble to themselves, refuse to comply with any such Request, were it even practicable, which we are apt to think is not the Case; and therefore, if the Tickets purchased at the *Molesworthean* Offices are endued with that happy Propensity to come up Prizes in Preference to others, it must arise from their being signed or indorsed by *John Molesworth, Esq;* How such manual Operations can impress a Tendency upon those Tickets in the Number Wheel, to come up parallel with Prizes in the other, we confess ourselves greatly at a loss to comprehend; nor indeed are we less so, to conceive how the Circumstance, alluded to in the Advertisement, "creates Fifteen Hundred Prizes of Twenty Pounds more than are contained in the Scheme of the Lottery."

The next Article of the Advertisement which we shall observe upon is, "That four of Mr. *Molesworth's* Numbers have constantly equalled five pro-

promiscuous ones for capital Prizes." If this should happen again, in the present Lottery, it then follows, by the GOLDEN RULE, that 3000 of Mr. *Malesworth's* selected Tickets must be as good as 3750 of the common ones; upon this Account the Proprietors do engage that in thirty-five Numbers there shall be a Fifty Pounds Prize or upwards, notwithstanding forty-six Tickets (common ones) are only entitled to such Prize. What the Proprietors mean by the Word *engage* we do not for certain know, unless it be to make good 50% to the Purchaser, in case there shall not be a Prize of that Value or upwards in the said 35 Tickets, the 15% Prizes with regard to this Agreement are, we suppose, to be deemed as Blanks. The Lottery will now consist of 1300 Prizes and 58,700 Blanks, and consequently the latter in Proportion to the former as forty five to one. When the Blanks in a Lottery are thirty nine to one Prize, *Demoivre* and others have clearly proved that in twenty eight Tickets one or more Prizes may, upon Equality of Chance be expected; therefore, by Proportion, as thirty-nine to twenty eight, so is forty five to thirty-two nearly, which shews, that in taking thirty two common Tickets, the Adventurer is as likely to have a 50% or a greater Prize as not, and consequently, as four of the select is constantly equal to five common Tickets, it is very evident that Messieurs, the Proprietors, might have engaged for a 50% Prize being within the Compass of only twenty-six of their valuable Numbers; these Gentlemen do therefore depreciate their own Proposals, when they inform the Public, that thirty-five selected Tickets are necessary for the abovementioned Purpose.

The next Article which comes under our Consideration is, "Any even Number of whole Tickets, at 13*l*. 18*s*. each, will entitle the Holders to Forty Shillings for each Blank, if they do not produce as many Prizes as Blanks." This Proposal, with regard to single Purchasers of even Numbers of Tickets, is very obvious; but there is another Circumstance, although not mentioned by the Advertisers, which is, or should be understood to be contained therein, and may run thus: Two Persons, *A* and *B*, become Adventurers in the present Lottery, and purchase their Tickets at the *Molesworthean* Offices abovementioned. *A*, for Example, buys ten Tickets at No. 67, *Holborn*, and *B* receives fourteen from No. 30, in *Fleet-street*. This premised, it is evident that if *A* gets five Prizes in his ten Tickets, he is not entitled to any Return from the Office where they were bought, upon the Account of Blanks; but if eight Blanks fall to *B*'s Share, the Office at which they were purchased must refund Sixteen Pounds to him upon that Account. Now let us suppose that *A* buys *B*'s Tickets of him, and then takes the whole Number, viz. twenty-four (in which there are certainly more Blanks than Prizes) to the Office, should not the Proprietors in this Case repay to *A*, who is now the Holder, Forty Shillings for each of the thirteen Blanks, notwithstanding upon the Success of *B*'s Tickets alone, they were obliged to repay no more than Sixteen Pounds. The Offices can certainly have no Sort of Objection to this Procedure, as their Agreement with the Public seems to be, that the Holders of the Tickets, void of any Restriction whatsoever, is the Person entitled to the Drawback, so that the Tickets being bought at one Office, and offered to Sale at another, or collected

lected from different Buyers, ~~is~~ make nothing against Repayment being made for the Blanks, in the very same Manner as if the twenty-four Tickets had been purchased by one and the same Person at either of the three particular Offices belonging to the Proprietary. This Condition of Sale, though not (as we have already observed) expressed in the Advertisement, we apprehend will be sincerely realized by the Office Proprietors, to the Holders of those Tickets, in Manner and Form abovementioned, as shall appear to be honoured with Mr. Moleworth's Signature; and upon this Supposition we shall venture to compute the Profit which may arise to the Proprietors by the Sale of their selected Tickets.

We allude to the Profit, because, however these Offices are to be understood as opened with a View to Public Benefit, rather than any Emolument to themselves, yet nevertheless they have an undoubted Right to be Gainers, in some Degree, for the Trouble and Expences necessarily attending the Lottery Business which they may transact. But before we enter upon the Calculations for this Purpose, we shall take the Liberty just to advert upon some Articles of these Proposals, which seem no less extraordinary in their Nature than those we have already noticed. The first which presents itself of this Kind is, "To produce as many Prizes as Blanks, there must be 30,000 Prizes, and consequently 10,000 additional ones which, only of 15 $\frac{1}{2}$ each, amount to 150,000." This is infallibly true, upon the whole Lottery, for then in every two Tickets, there is certainly one Prize due; but there is a wide Difference between what may be claimed as a certain Right, and what
may

may arise from Probability in Chance; thus, if a Man takes ten Tickets in a Lottery where the Number of Blanks and Prizes are equal, he has, it is clear, a Right to claim Five Prizes, because, if the Lottery was thus distributed, there would fall to each Person's Share, an equal Number of Blanks and Prizes. On the other Hand, if the Fate of ten, or any other Number of Tickets, are to be distributed by the Chance of Drawing, it is manifest that fewer Tickets will be sufficient to obtain a Probability of that happening, which was before a Certainty; and this is well known to Mathematicians, for in a Lottery where the Blanks equal the Number of Prizes, an Adventurer, by taking three Tickets, may reasonably expect two Prizes, and in five Tickets it is an equal Chance whether there shall, or shall not, be three Prizes. See *Demoivre's Doctrine of Chances*. Page 41, where the Truth of this Assertion is clearly proved.

We apprehend it will be needless to inform our Readers, that the actual Sum of 150,000*l.* as mentioned above, is not really added to the Lottery, either by Mr. Moleworth or the Office Proprietors, neither is the increased Value of the Tickets, viz. 2*l.* 10*s.* intrinsically worth that Sum, the pretended Augmentation to the Lottery is merely ideal, the enhanced Value of the Tickets as much so, and the Advantages proposed to the Adventurers by this Article stand exactly in the same Predicament. But lest any Difficulty should arise about the Validity of what we have here advanced, it may be necessary to pursue this Matter a little farther, being really of Opinion that the Lottery for 1775, is entirely unaffected by the Proposal, nor will any Advantage, even of a single Shilling, be gained by the

the Preference given to Mr. Moleworth's Tickets at 13⁴ 18s. each, with 140s. returnable upon Blanks, in the Manner prescribed by the Conditions of Sale.

We conceive the Proposals in the Article under Consideration, may, without any Violence being offered to the Sense of it, be thus interpreted; in a Lottery containing 60,000 Tickets wherein there are 40,000 Prizes, the just Value of a Ticket (before drawing) is admitted to be Nineteen Shillings and Sixpence; (this Value is the exact Difference between the supposed present Prices of Mr. Moleworth's and common Tickets) and if an Adventurer in this Lottery purchases any even Number of these Tickets; for Example, suppose Sixteen, he shall receive for every Blank, provided there are not less than Nine in the said Sixteen Tickets, the Sum of Forty Shillings: this is certainly a true State of the Case, the Value of the Prizes in the Lottery, whatever that may be, can make no Sort of Difference with regard to the present Consideration, because the Blanks and Prizes still remaining the same in Number, and no Addition being made to the real Value of the Lottery, it cannot be of the least Consequence to estimate the Prizes at any particular Sum, but only to distinguish them as such, in opposition to the Blanks. Now, if in the said sixteen Tickets, there should arise either precisely one, two, three, four, five, six or seven Prizes, the Adventurer will be entitled to a Draw-back of Forty Shillings upon each Blank; so that one Prize and fifteen Blanks injures to him the Sum of Thirty Pounds; in like Manner, if there should come up two Prizes and fourteen Blanks, the Adventurer by that Means must be paid

paid by the Proprietors the Sum of Twenty-eight Pounds, and so on in this Manner, until the Blanks and Prizes become equal, from each of these Sums, as Thirty, Twenty-eight, Twenty-six Pounds, &c. If we deduct the original Amount of all the sixteen Tickets, to wit, 15*l.* 10*s.* the Remainders will be the eventual Gains to the Purchaser in each circumstance respectively; and consequently these several Sums multiplied by the Probability of being obtained, produce the real Profit to the Adventurer; and on the contrary, the negative Products, which take place when there are more than seven Prizes, ascertain the Profit on the Office Side of the Question; and if the Aggregate of these Products exceed the Sum of the former, it is then evident that the selected Tickets will scarce prove so advantageous to the Purchaser as common ones; we know very well, and we allow, that there is a small Advantage arising from the Circumstance of adding One Thousand Pounds to the last drawn Ticket; but yet, if the Candidates for this valuable Prize must pay more than an adequate valuable Price for the Expectation of it, wherein then can the Purchasers of the *Motefworthbean* Tickets be benefited, even if we admit that the Offices dispose of 3000 such Tickets, it is then twenty to one, that the last drawn Ticket does not happen to appear in that select Company, without the Intervention of a Miracle, by which four selected Tickets become equivalent to five common ones; in this Case indeed the Odds decrease to no more than sixteen to one; but we should rather be inclined to confide in the former Ratio, more especially since we consider this celebrated Calculator simply as Man without possessing, or being possessed by any enthusiastic Intelligence whatsoever, and no farther capable

of

of predicting with Certainty concerning future Events than other Men of exalted Genius, and the deepest Skill in mathematic Computations.

The next Article to which we direct our Enquiries is, "That if the Calculation was merely ideal, and Mr. *Molesworth's* selected Numbers of no greater Value than promiscuous ones, the Proprietors, by selling Tickets upon these Terms, must (upon the whole Lottery) lose Twenty Thousand Pounds."

The Words "upon the whole Lottery" render this Article so extremely difficult to be understood (at least by us), that we had once almost given it up as inexplicable, or at least to place it among the Desiderata of the *Molesworthean* Principles; yet as an entire Silence thereon might give our Readers Room to suspect our Inability, or what is still worse, our Integrity, to the Task we have undertaken, for the Information of the Public, we therefore chuse to make an Attempt (because all Attempts are practicable) towards an Elucidation of this extraordinary Assertion.

We begin thus: To lose Twenty Thousand Pounds by selling Lottery Tickets upon advantageous Terms, seems rather paradoxical, it reminds us of a Man, who being asked by the Engineer of *Westminster* Bridge, when that Work was just finished, for his Opinion of it, answered, That he (the Engineer) had acted with great Judgment in building the Bridge directly across the River, for had he built it lengthwise, it would not have answered the Purpose near so well.

But

But to return. Let us suppose that Mr. *Molesworth* becomes Proprietor (by purchase) of the whole Lottery, this at 12*l.* 10*s.* per Ticket, amounts to 750,000*l.* which sold again at 13*l.* 18*s.* per Ticket, comes to 834,000*l.* consequently his gain by this Transaction is 84,000*l.* Admit that all the 60,000 Tickets are signed by Mr. *Molesworth's* own Hand; and farther, that all the Blanks and Prizes, when drawn, come again to *Molesworth's* Offices for Payment, which indeed they must do, and are all brought at the same Time as belonging to the same Proprietary. Mr. *Molesworth*, or others for him, are obliged, by the Agreement, to pay Forty Shillings for every Blank, which will amount to just 80,000*l.* to this add 1000*l.* the Addition for the last drawn Ticket, gives 81,000*l.* this Sum being substracted from 84,000*l.* the former Gain upon the whole Lottery, leaves 3000*l.* certain Advantage, instead of 20,000*l.* Loss upon the whole Lottery. We are most undoubtedly right in this Determination, if we judge truly of the Principles of the Proposal, the Calculations being certainly just; yet we entertain some Suspicion of the former, because the Loss of 20,000*l.* upon the whole Lottery should seem to arise from Mr. *Molesworth's* Calculations being merely Ideal; or, which is the same Thing, from his selected Numbers being of no greater Value than promiscuous ones, as himself expresses it. But what has this to do with the *whole* Lottery? Mr. *Molesworth*, with all his sagacious Skill, cannot, we verily believe, select from a Lottery more Prizes than are in it; so that, whether his Calculations be ideal, or otherwise, they can have no Sort of Influence whatsoever upon the whole Lottery; for notwithstanding he may be capable of selecting 296 (the Number in the Lottery) of such

fortunately inclined Tickets, yet it does not seem probable that he can continue this Prediction throughout the whole 60,000 Tickets; and as we are not told how far, or to what Number of Tickets this wonderful Foresight extends, we must confess ourselves at a Loss how to account for the Propriety of this Part of the Advertisement, unless it be by a similar Circumstance to that whereby this ingenious Gentleman has added *Fifteen Hundred Prizes, of Twenty Pounds each*, amounting to no less than 30,000*l.* to the Scheme of the Lottery, without the actual Advancing of a single Shilling towards it. If this be true, and that it is so, we have, or which is all one, Mr. *Molesworth* has, the Testimony of Persons of the first Rank and Character, among whom are Lord Mayors of the City of *London*. Can it then be thought possible that a Person so eminently skilled in the deep and most difficult Parts of *lotterean* Speculations, should calculate himself and his Friends into a certain and payable Loss of 20,000*l.* who at the same time, nay in the same Proposals, schemes to the Public an absolute Advantage of 30,000*l.* without any, even the least, Expence to himself? Certainly it cannot! We therefore hope our Readers will excuse our Inability towards rendering this Article as satisfactory to them as we could wish, and as the Nature of the Subject seems to require.

Mr. *Molesworth* tells us, that "The Chance of the Lottery is 50 *per Cent.* against an Adventurer, in any Number of Tickets within the Compass of a moderate Fortune," and to prove this, he frames an Example wherein there must necessarily be a Loss of 80*l.* sustained by the Adventurers upon the Purchase of twenty Tickets in the present Lottery, amounting, at the average Price to 260*l.* admitting

ting that *Mr. Moleworth* can even insure twelve Prizes to fall within the Compass of those Numbers, to which our Calculator adds, "*Will it be denied that this is a very great Advantage?*" Why really, Sir, we are of Opinion, that it will be denied even by the Purchaser of those fortunate Tickets, when he finds himself four Score Pounds Sterling out of Pocket by the Bargain.

As we have taken rather more Liberty with this Gentleman, in regard to the present Article under Consideration, than perhaps may appear consistent with our declared Opinion of his unerring Judgment in the most profound Investigations of this Kind, it would be Injustice not to own, That the apparent Mistake, here adverted to, might possibly arise from some undiscovered Disorder being in the Wheels by which *Mr. Moleworth* proves his Calculations, just at the Time of Operation; and that such an Accident might render the whole Process defective we can readily conceive, it being exactly parallel to what sometimes happens in those Countries where, we are told, the Taylors use a mathematical Quadrant, instead of Parchment, to measure with, namely that by one single Figure being wrong in the Calculation, a whole Suit of Cloaths has been entirely spoiled. We are the more inclined to think this has been the Case with *Mr. Moleworth*, because the Error in his Computation seems to rest upon the Number 15, which should have been 30, the average Value of a Prize in the present Lottery, being just that Number of Pounds, we mean exclusive of the 1500 Prizes of Twenty Pounds each created and added to the Scheme of the Lottery by our Calculator, for the Advantage of those who purchase selected Tickets

F 2

only;

only, and we doubt not, if Mr. Moleworth will take the trouble to revolve this Article once more in his Mind, or rather in his Wheels if they are in perfect good Order, he will be satisfied that the Number 30 should take Place instead of the Number 5. As a farther Proof that the Mistake must have happened, by something being amiss, in the Wheels, rather than in the Calculator's Judgment, we will now attempt a Solution to his Example, agreeable to those Principles upon which it should be founded. Thus the Purchase of Twenty Tickets at 12*l*. 10*s*. each, the just Value of a single Ticket, as authorised by Parliament, amounts to 250*l*. exactly, these Tickets being retailed by the Offices as selected Numbers, at 13*l*. 18*s*. each, comes to 278*l*. Now as there are 20,000 Prizes, amounting to 600,000*l*. in the Lottery (without Mr. Moleworth's 1500 additional Prizes) it is clear that the mean Value of a single Prize, before drawing, is 30*l*., so that twelve Prizes, the Number insured to the Purchaser of twenty selected Tickets, repays to the Adventurer 360*l*. for 278*l*. expended. Here it is evident that the Office gains 28*l*. or, however, 18*l*. according to the Calculator's own Account of the average Price of twenty Tickets, and at the same Time, the Adventurer clears 82*l*. by this Transaction, will it be denied that this is a very great Advantage? Certainly not. And undoubtedly such would have been the Result of Mr. Moleworth's Calculations, if the Wheels had not deceived him, at least we think so, because our Investigation, we flatter ourselves, is founded upon just Principles, and therefore the Effect of either Method should have been the very same. It is, we must confess, somewhat uncommon to hear of mathematical Demonstrations being proved by

Lottery

Lottery Wheels, however, as Mr. *Molesworth's*
 Calculations relate entirely to the Laws of Chance;
 it is natural to suppose, that if those Calculations
 required any instrumental Confirmation, a set of
 Lottery Wheels would be the most eligible for
 that Purpose; and who knows but that our Cal-
 culator, by indefatigable Industry, assisted by the
 deepest Penetration into these Matters, may have
 discovered some *Archanum*, whereby the Motion
 of the Tickets in the Lottery Wheels, are just as
 familiar to himself, as the Motion of the celestial
 Spheres is to the Astronomer, by Means of the
 Orrery.

The only Prediction to which Mr. *Molesworth*
 pretends, with any Degree of certainty, seems to
 be, that he can point out Numbers, that, upon
 the whole Amount, would prove more successful
 than the Chance of the Lottery. What is here
 meant by the Chance of the Lottery, we do not
 very well understand; for we suppose the Lottery
 is all a Chance, and indeed it is, or should be so,
 in every Sense of the Word, unless Mr. *Molesworth's*
 selected Tickets make it otherwise; be this as it
 may, we will venture to ask as follows: Can this
 Gentleman make Mention of, or write down such
 Numbers throughout the Lottery, as shall stand a
 better Chance to come up Prizes than others; that
 is, can he assure us that, for Example, Numbers
 17, 254, 235, 11, 335, 127, 841 shall have a greater
 Propensity to become Prizes than Numbers 53, 218,
 89, 104, 32, 586, 237, 518; or will he, upon being
 shewn a Parcel of Tickets, select from among
 them, such as shall be more fortunate than an
 equal Number of those which remain? Again,
 will Mr. *Molesworth* stake his Reputation, and a
 considerable

considerable Sum of Money likewise upon these Events happening in justification of his assertions, not, we will venture to affirm, that the Advantages attending Mr. Moleworth's selected Numbers, notwithstanding they are said to be approved of by the most eminent Mathematicians, and obvious to every Capacity, will gain very little Credit with those who have any Capacity to judge at all; and indeed we must ingenuously confess there appears a Kind of Reservation throughout these Proposals, which seems to render it a Matter of much Doubt (to us) whether Mr. Moleworth is equal to the arduous Task he has undertaken for the Public Good.

In support of this our Opinion, we beg Leave just to make a few Remarks upon the printed List of Prizes, said to be in Mr. Moleworth's Calculation on some former Lotteries, such as in the Years 1767, 1768, 1769, &c. "The Calculation did not contain quite half the Numbers in those Lotteries," these are his own Words; and we suppose they mean, if they mean any Thing, that Mr. Moleworth selected the fortunate Tickets from about half the Number of the Tickets contained in the whole Lottery; if he selected from about half the whole Number of Tickets, it is evident, that according to common Reason, there was just the same Probability for the Prizes to fall in one Half of the Numbers, as in the other: but as Mr. Moleworth has not mentioned the exact Number he fixed upon, whether within three or three hundred, &c. of the middle Number, we cannot so justly ascertain how far Chance was either on his Side or against him. In the Lottery 1767, he enumerates six Prizes, viz. one 20,000/ three 10,000/.

20000 and two 50000 which fell within his
 Calculation, it does not seem very easy to deter-
 mine what is to be understood by his Words
 "within his Calculation," if they mean that the
 said six Prizes fell within any assigned Numbers in
 Quantity equal to half the whole Lottery, there
 is no Difficulty about it, because those Prizes
 might as well happen to be in one Half of
 the Tickets as in the other Half; for Mr.
Molesworth did not undertake for those Prizes
 to come up against the Numbers to which
 they stand opposite in the Scheme, but only that
 there should arise more Prizes among his selected
 Tickets than among an equal Number of other
 common ones; nor is it to be understood that his
 Predictions relate to the Value of those Prizes,
 for at the same Time that there may be a greater
 Number of Prizes found among the selected Tic-
 kets, yet they may be of less Value than those
 which may happen to arise in an equal Number of
 Tickets, not in Mr. *Molesworth's* Catalogue. In
 the six Lotteries above mentioned, the Number of
 capital Prizes, according to the printed Account
 were 472, of these 315 were in the Calculations
 Here is something ambiguous in this Determina-
 tion; for by the Words, capital Prizes, we should
 imagine, is to be understood those of 20000. and
 upwards; but this seems again to be contradicted
 by what follows, viz. The Number of capital
 Prizes of 5000. and upwards, &c. Now taking ca-
 pital in this Sense of the Word, it appears a little
 extraordinary there should be no more than 472
 Prizes in six Lotteries, above 1000. each, we have
 not the Schemes of those Lotteries by us, and there-
 fore cannot be certain; but we believe there were
 many more, it not being usual in State Lotteries,

as

as far as we can remember back, to have any Prizes between One Hundred and Five Hundred Pounds; however, granting it to be as our Calculator has it, and that there were no more than 472 such capital Prizes in the said Lotteries; let us now enquire into what is to be understood by 315 of these Prizes being in the Calculation, or rather how the Term Calculation is itself here to be understood. The first Lottery in the List is for the Year 1767, in which there were seventy-eight capital Prizes, forty-eight of these were in the Calculation; by this Account we are perhaps to understand that Mr. *Molesworth* calculated forty-eight of these Prizes into his own Regiment of selected Tickets, otherwise it could not be said there were just that Number in the Calculation; in the next Lottery Mr. *Molesworth* selected fifty-six out of eighty capital Prizes; and in the third Lottery fifty-four out of eighty-two such Prizes. In this Manner he proceeded through six successive Lotteries with very little if any Variation; for the Numbers expressing the capital Prizes in the several Lotteries are nearly proportional to those which fell within the Limits of his Calculation; for Example: In the first Lottery the Calculation was we suppose, about forty-eight out of seventy-eight capital Prizes, for we do not imagine the Calculation gave exactly to a Ticket the same Number as the actual drawing of the Lottery produced, therefore if we compare this with the Lottery in 1772, it will be $78 : 48 :: 48 : 54 \frac{6}{9}$, that is, as 78 capital Prizes assigned 48 to Mr. *Molesworth's* List in 1767; 88 capital Prizes in 1772, gave, by Proportion, 54 and $\frac{6}{9}$ to the said List, which is within little more than three Quarters of a Ticket of the true Number, which was 55. We began to think

think ourselves extremely happy in this Discovery concerning the constant Ratio of the capital Prizes in a Lottery, to Mr. Moleworth's selected State of them, and were just upon the Point of applying it to the present Lottery, when suddenly casting an Eye upon the Article immediately subsequent to the List of Prizes, we observed, that a Book containing no more than 296 Numbers, produced as many capital Prizes as 3000 promiscuous Numbers are entitled to. This Book is signed and authenticated by Mr. ALDERMAN BULL, and other respectable Gentlemen; well, there is no Help for it, it is an Improvement made in the Year 1774, by which the Moleworthian Tickets are increased in Goodness, and consequently in their Value also, in the very same Proportion as four to five is increased to that of 296 to 3000, or one to ten nearly. This Alteration in the Proportion between the selected Tickets and common ones, entirely defeats the Purpose of our Investigations, which indeed were founded upon the Supposition *that four of Mr. Moleworth's Numbers have constantly equalled five promiscuous ones for capital Prizes.* However as the Alteration seems to be greatly in favour of the Adventurers, we are contented to give up our Pretensions towards discovering the Principles of the celebrated Calculator's Demonstrations; indeed the Mystery is so very great, that all our Attempts for that Purpose must certainly prove ineffectual, for if we were to calculate upon the last Improvement, we should find that 300 selected Tickets in the present Lottery should contain 1500 Prizes, which is absurd, for there being two Blanks to one Prize, it is evident that in every three Tickets there is one Prize due; and certainly upon Equality of Chance rather something

more might be expected; consequently in 3000 promiscuous Tickets, we might reasonably expect about 1500 Prizes. It is true Mr. *Molesworth* says, that 296 selected Tickets are as good as 3000 common ones, with regard to capital Prizes only; but certainly there can be no sufficient Reason for this Restriction; the selected Tickets, we apprehend, are equally inclined to receive Prizes of every Denomination; and although it is impossible that 296 selected Tickets can contain 1500 Prizes, we suppose that by the Force of Mr. *Molesworth's* Demonstrations, they are so contrived as to compensate this Defect in Number, by the Value of the contained Prizes, which does in some Measure account for the Introduction of capital Prizes only.

We dwell rather longer upon this Part of the Advertisement than was first intended, being willing to give our Readers all the Satisfaction in our Power, with regard to the amazing Improvement so lately made in the Value of Mr. *Molesworth's* selected Tickets; for if, as has been already remarked, 300 of those Numbers can include as many capital Prizes as might be expected to fall to 3000 promiscuous Tickets, must it not follow, that 300 of the former must be just as good as 3000 of the latter; and so by Parity of reasoning, one *Molesworthian* Ticket just of equal Value with ten common ones, hence, by Proportion, $11 : 1 :: 60,000 : 5418$, so that upon the Purchase of 5418 selected Tickets, the Buyer may be said to possess, eventually, more Value than the remaining Tickets in the Lottery will probably produce. This prodigious Advantage is not to be neglected, because it is uncertain how long it may last; nor are we

sure

sure the next Turn the Tickets take, by way of
 Alteration, will be so much for the public Good
 as was the last, it being certain that they were not
 near so valuable before, for repeated Experience
 has proved, that from the Year 1767 until 1774,
 the Proportion between the Goodness of selected
 and common Tickets was constantly as four to five,
 that is the Value in Goodness (not Price) of four
 selected Tickets, exactly equal to five common
 ones, which was then looked upon, and indeed
 was, a very considerable Advantage, but scarce
 worth mentioning, when compared to that above
 described. It is true capital Prizes are not all of
 equal Value, and therefore it may be argued, that
 the total Amount of the Prizes in the selected Tic-
 kets may fall far short of the like Amount in the
 common ones; this indeed, we believe, would
 sometimes be the Case, did not Mr. *Molesworth*
 make some Provision against it, by such Methods
 as himself best understands. That he has done
 this before, is evident by the printed List
 of several Lotteries past; and that he may per-
 form the same again, will probably appear as
 evident by a similar Proof made by the draw-
 ing of those Lotteries which are yet to come.
 That Mr. *Molesworth* can impress the capital Prizes
 into his Service is generally allowed, though at the
 same Time he is not quite certain in what particu-
 lar Range, with respect to Number, they may
 happen to be placed, it is we think very suf-
 ficient, and certainly an Acquisition, to be able to
 point out where, after perhaps many hundred Re-
 volutions, they may be probably be stationed at
 last. And to shew how near to a Determination
 of such Importance, Mr. *Molesworth's* Calculations
 have conducted him, we need only advert to some

past Lotteries, where it will abundantly appear, if these Sort of Catalogues may be credited, that upon a Medium estimate it is found, that eight selected Tickets generally incircled about 76,000*l*. and consequently one of these valuable golden Numbers equal to, or which is the same Thing, produced the significant Sum of 9500*l*. principal Money; thus far we have proceeded upon the Reputation of our Calculators's Advertisement, nor have we knowingly interpreted any Part of it to the disadvantage of his Fame, when, consistent with Truth and the Duty we owe to our Readers, we could possibly avoid it. It is true we have somewhere in the former Part of this Work declared it as our Opinion, that the *Molesworthean* Schemes would prove of no real Advantage to the Adventurers in the present Lottery, that the pretended Addition to the said Lottery of many hundred Prizes was ideal or rather chimerical, and that all the Demonstrations this eminent Calculator can possibly produce, will never realize one superior Shilling to the Purchasers of Tickets at those Offices where his celebrated Computations are strictly adhered to, beyond what may reasonably be expected to happen at any other Place; and this Opinion, we must freely own, we have not as yet seen any Reason to retract. Facts we well know are stubborn Things to get over, Books signed, sealed, authenticated, &c. by Gentlemen of the highest Reputation, delivered before Drawing into the *Guildhall* of the City of *London*, kept there in safe Custody until the Lottery was entirely over, then opened in the Presence of the L. M. and other respectable Personages, and found to replete with capital Prizes, that one would really wonder how they could possibly get there; for

for we do not think that the Book being kept in the same Place where the Lottery was drawn, could have any Effect upon it, or but very little. We are therefore, since Facts appear so much against us, obliged ingenuously to own that we are rather convicted than convinced; and we suppose by this Time our Readers, for the same Reasons, are in a similar Predicament; yet there is some Help at hand, for "if any Part of the above (Mr. Moleworth's) Explanation is not sufficiently understood, it is requested Application may be made to the Offices, where every Satisfaction will be given;" and we add, No doubt but every Article of the mysterious Advertisement will be duly explained to the diligent Enquirer, clear as the Sun in full Meridian blaze.

Now we proceed to the last Article of these Proposals, which is said to contain a farther and incontrovertible Proof, how much the warranted Tickets are really in favour of the Adventurers, and how far they are superior to promiscuous Numbers, will be evident by the following Example, which our Calculator states thus: One hundred Tickets at One Pound Premium each, warranted to produce one Blank to a Prize, or Forty Shillings to be paid for each Blank, amount to One Hundred Pounds advance. Sixty-seven Blanks (two to one) the Proportion of one hundred promiscuous Numbers to be paid for, at Two Pounds each, are 134l.

| | | | |
|-----------------------------|---|---|-----------|
| Premiums as above | - | - | 100 |
| Ballance against the Seller | = | - | <u>34</u> |

In

In this Example the Loss of Thirty-four Pounds upon negotiating one hundred Lottery Tickets, seems principally to depend upon a Circumstance not readily admitted, which is that there shall certainly be seventy six Blanks among the 100 Tickets; it is true they possibly might come all up blank, but when we are to estimate the Loss or Gain eventually, depending upon the Failing or Happening of an Event, we are to reason upon Equality of Chance, thus; if a Man has an equal Chance to lose 100l. or to save it, his Loss before the Event shall be determined, can only be rated at Fifty Pounds, and consequently the above-mentioned Loss of Thirty-four Pounds to which the Proprietors are eligible, but not absolutely certain of incurring, will be much diminished by the Improbability of its happening. It would take up too much of our Time just in this Place to trace the exact Profit or Loss upon 100 warranted or promiscuous Tickets, disposed of according to Mr. Moleworth's Plan; nor indeed is it very material, it being, we apprehend, of little Consequence to the Adventurer when he purchases Tickets, whether the Office-Keeper gets or loses, provided he (the Purchaser) buys at a fair and equitable Market Price. Or what can it signify to an Adventurer in the present Lottery, whether the Proprietors of Mr. Moleworth's Calculation chuse to purchase, upon their own Terms, as many Tickets as other Office-Keepers wish to dispose of; for these Reasons, we do not look upon what has been advanced in this Article of the Advertisement as an incontrovertible Proof how much the warranted Tickets are really in Favour of the Adventurer.

We

We have now gone through all the Articles of these extraordinary Proposals, presented to the Public, from the *Molesworthean* Offices, in the Course of this Examination; we flatter ourselves, we have impartially stated Facts, omitted no Circumstance, however minute, which might prove serviceable to our Calculator, in support of his System; and carefully avoided, by all possible Means, any Kind of Obloquy whatsoever, which might prove injurious to his Fame. If we have sometimes doubted, we have not totally denied; and if in some Places we have been rather inclined to Pleasantry, we have not been ludicrous, and therefore in whatsoever Point of Sight the *Molesworthean* Gentlemen shall be pleased to view us we hope, when it shall be considered how difficult the Task must be to explore the Principles of a System surrounded with almost impenetrable Mystery, a System hitherto unknown, or if known, neglected; the Want of proper Data for the Basis of Enquiry, together with our own Insufficiency for that Purpose, we shall stand excused, and permitted to say with *Horace*, *Vitiis nemo sine nascitur*.

Our next and final Business in this Undertaking, is, to calculate the certain, and likewise eventual Gain, which may arise to Lottery Offices in general, by the Sale of warranted and promiscuous Tickets; and as the *Molesworthean* Offices propose greater Advantages to their Customers, and of consequence less to themselves, than others, we shall begin this Part of our Design with investigating what Profit may probably arise from their negotiating some certain Number, admit 3000, warranted Tickets of the present State Lottery, 1775. In order to this, it would be necessary, could it be

be obtained, to know at what Price the Tickets were first purchased by the Office Proprietors, but as this cannot be discovered to any Degree of Certainty, we will therefore at present rate them at their original Price, and real Value, viz. Twelve Pounds Ten Shillings each, and upon this Supposition conduct our Computations.

If the *Molesworthean* Offices dispose of ten Tickets (we mention ten, because what is true of ten, is proportionably so of any Number extremely near) divided into Halves, Quarters, Fourths, &c. at the respective Prices set against those aliquot Parts in their Proposals, it will follow, that the average selling Price per Ticket is 13*l.* 7*s.* 7*d.* their Gain certain upon this Ticket amounts to 17*s.* 6*d.* and by negotiating 3000 Tickets in this Manner, they would clear 837*l.* 10*s.* and this we may justly look upon as certain Profit, admitting they sell 3000 Tickets, and at First Hand purchased them for 12*l.* 10*s.* per Ticket; it is very possible they might give something more in the Purchase of those Tickets, and therefore, on that Account, the abovementioned Profit of 837*l.* 10*s.* becomes in some Measure reduced, but tho' we cannot exactly ascertain the original Price, nor consequently the real Gain, we may venture to suppose the latter nearly in that Proportion, according to the Number of Tickets disposed of. However, in order to avoid Confusion in our Calculations, we shall constantly rate the first Price of the Tickets as above, viz. 12*l.* 10*s.* each, and in balancing our Accounts, make an adequate Allowance upon that Consideration. Now if ten Tickets be disposed of in Chances at the respective Prices as set down in the Proposals, namely,

whole

whole Chance for 9*l.* a half Chance for 4*l.* 12*s.* a Quarter for 2*l.* 7*s.* &c. &c. the selling Average Price of the Chance of a whole Ticket will be about 9*l.* 6*s.* 7*d.* and consequently the Offices will sell ten Tickets in Chances for 95*l.* 5*s.* 10*d.* which cost them not less than 125*l.* and may therefore lose 29*l.* 14*s.* 2*d.* by the Bargain, indeed it is not very likely to be so, but it is possible, because the happening thereof depends also upon Chance.

When the Office Proprietors sell Chances of Tickets in the Manner here described, it is to be understood that the Benefit of 15*l.* Prizes are excluded to the Adventurers, by the Office Agreement; and the Lottery becomes (to them) changed into another wherein there are 58,700 Blanks and 1300 Prizes. The Prizes amount to 319,500*l.* divide this Sum by 60,000, the whole Number of Tickets, and the Quotient, *viz.* 5*l.* 6*s.* 6*d.* is the Value of a Ticket in this new Lottery, and which the Offices sell upon an Average for 9*l.* 16*s.* 7*d.* The Value of the Chance of a Ticket in the present State Lottery to the Adventurer, is no more than we have given it, admitting the Game between Buyer and Seller of such Chance, to be played upon equal Terms. However, to prevent, if possible, the Imputation of being too rigid in our Estimates concerning the Profit to this Branch of the Office Keeper's Business, we will allow that the Price of the Chances may be somewhat augmented upon the Consideration of their paying 12*l.* 10*s.* or perhaps rather more, for a Ticket which is rated at no more than 10*l.* in the Scheme of the Lottery; hence, as 10*l.* is to 12*l.* 10*s.* so is 5*l.* 16*s.* 6*d.* to 7*l.* 5*s.* 7½*d.* the selling Price of a whole Chance, and by Proportion the Subdivisions may likewise be ascertained.

Our next Enquiry relates to the Office Profit. The 15*l.* Prizes, which are undubitably Blanks to the Adventurer, become the Property of the Office Proprietors, and the eventual Profit on this Account, sufficiently compensates the Risk of losing upon each Ticket the Difference between the original Price thereof, and what they sell the whole Chance for, or rather what they should sell it for.

To the Office Proprietors, in respect of Chances, the Lottery now consists of 18,700 Prizes of 15*l.* each, and 41,300 Blanks; consequently the Probability of taking a Prize with a single Ticket, is just $\frac{413}{600}$; this premised, it is very clear that if the said Ticket should come up a real Blank, or any other Prize than 15*l.* the Office Keeper receives no Benefit therefrom, but on the contrary loses the Difference between what he sold the Chance for, and the original Price of the Ticket, which Difference we have already stated at 2*l.* 13*s.* 5*d.* Now the Office Proprietor, or Seller of the Chance of a whole Ticket, has, before drawing, 187 Chances for gaining 24*l.* 16*s.* 7*d.* and 413 Chances for obtaining only 9*l.* 16*s.* 7*d.* consequently the Value of his expectation upon this Event is equal to $187 \times 24\text{ l. } 16\text{ s. } 7\text{ d.} + 413 \times 9\text{ l. } 16\text{ s. } 7\text{ d.}$ is 14*l.* 9*s.* 11*d.*

But the Ticket cost the Seller of the Chance 12*l.* 10*s.* therefore his real Profit arising from disposing of a whole Chance of one single Ticket by this ingenious Method of serving the Public with good Fortune in small Quantities, is no more than *bare Forty Shillings!* Extremely reasonable, considering there is now no Five per Cent. deducted, or such like Impositions used at present, by Lottery Offices, as have been practised heretofore upon the unwary.

Our

Our next Enquiry relates to the Office Profit upon Selling Tickets upon the returnable Clause, with regard to the Forty Shillings for each Blank, as proposed in the *Molesworthian* Schemes. In order to investigate such Probabilities as may be necessary for this Purpose, we shall premise as follows: That in a Lottery consisting of n Tickets, wherein a represents the Number of Prizes, and b the Number of Blanks, the Probability of taking p Prizes in r Number of Tickets will be expressed by

$$\frac{a \times \frac{a-1}{2} \times \frac{a-2}{3} \times \dots \times \frac{a-p+1}{p} \times b \times \frac{b-1}{2} \times \frac{b-2}{3} \times \dots \times \frac{b-r+p}{r-p}}{n \times \frac{n-1}{2} \times \frac{n-2}{3} \times \frac{n-3}{4} \times \frac{n-4}{5} \times \dots \times \frac{n-r+1}{r}}$$

See this demonstrated in *De Moivre's* Doctrine of Chances, Page 76, 2d Edition, or *Clark's* Laws of Chance, Page 96, and others.

If the Office Proprietors sell, for Example, two warranted Tickets, agreeable to their Proposals, they receive Forty Shilling advance; and if both Tickets come up Blank, they are obliged to repay Four Pounds to the Purchaser; by this Transaction the Office loses Forty Shillings, but if the Tickets come up both Prizes, or one Prize and one Blank, no Repayment is to be made, consequently, in this Case, the Office clears Forty Shillings by the Sale of those Tickets. In like Manner, if four Tickets are sold upon the same Conditions, and they all come up blank, the Office must repay Eight Pounds; but if there should be only Three Blanks, and consequently one Prize, the Repayment comes to no more than Six Pounds. The Office, in Compensation for this Risk of losing either Six or Eight Pounds, receives the Sum of Four Pounds in advanced Price upon selling the Tickets. Now if

the Sums which may be lost, be severally multiplied by the respective Chances for happening, and the aggregate of those Products be divided by the Sum of all the Chances, whereby those Sums may be either lost or saved, the Quotient will shew the Value of the Office Expectation, and which, accordingly, as it either exceeds or falls short of the Money (above Par) advanced upon the Purchase of the Tickets, exhibits the real Gain or Loss to the Office, by selling the proposed Number (two or four in our Example, of warranted Tickets, upon the returnable Clause for Blanks, as set forth in Mr. Moleworth's Advertisements. If s represents the Sum advanced (above Par) upon the Purchase of four of Mr. Moleworth's warranted Tickets, m and n those Sums which the Office may eventually lose, a and b their respective Chances for being lost, c , d and f the Chances whereby those Sums may be saved, then the Value of the Office Expectation upon this Contingency will be expounded by $\frac{a \times m + b \times n}{a + b + c + d + f}$ and therefore, $s - \frac{a \times m + b \times n}{a + b + c + d + f}$, the real Gain or Loss to the Office Proprietors,

Now by the foregoing Theorem it will appear, that in a Lottery consisting of 60,000 Tickets, wherein are 20,000 Prizes and 40,000 Blanks, the Probability of taking one Blank and three Prizes, with four Tickets, is $\frac{53328}{540000}$, that of taking two Blanks and two Prizes $\frac{160000}{540000}$, that of taking four Prizes $\frac{79992}{540000}$, these are the Probabilities whereby the Offices clear the advanced Money. Again, the Probability for the coming up of one Prize and three Blanks, or for repaying six Pounds is $\frac{213328}{540000}$, and for

for repaying eight Pounds, in case the four Tickets come up all blank, the Probability is $\frac{1}{160000}$, and hence the Office Expectation which is expounded by $\frac{a \times m + b \times n}{a + b + c + d + e}$ becomes 3*l*. 9*s*. 6*d*. which subtracted from Four Pounds, leaves 10*s*. 6*d*. the certain Gain upon selling four warranted *Molesworthean* selected Tickets in the present State Lottery 1775.

The *Molesworthean* Offices propose to add 1000*l*. to the last drawn Ticket, provided it falls within the Limits of their selected Numbers; now, there being 60,000 Tickets in the present Lottery, and only one of those can be 1000*l*. the last drawn, it follows, that the Probability of any assigned Number coming up with the said last drawn Ticket, is $\frac{1}{60000}$, and consequently the Expectation thereon for the Proprietor of a single Ticket, just *Fourpence*; this is the Case with regard to a common Ticket, but the Expectation upon a warranted Ticket, seeing that, according to the latest Improvement in the Calculator's Doctrine of Lottery Tickets, one of the select is equal in Goodness to ten common Tickets, is equal therefore in Value to *Three Shillings and Four-pence* principal Money.

Upon the Supposition that the Offices dispose of 3000 warranted Tickets, and those of equal Value with 30000 common ones, the Office Expectation of being obliged to pay the stipulated Sum, will be just 500*l*.

*A General SYNOPSIS of the Molefworthean
Profits, arising from their disposing of 3000 war-
ranted Tickets in the present State Lottery, 1775.*

| | | | |
|--|--------|-------|----------|
| Upon 3000 Tickets sold in Shares | £. 837 | s. 10 | } Profit |
| Ditto sold in Chances | 6000 | 0 | |
| Ditto sold upon the returning Clause for Blanks | 393 | 5 | |

| | | |
|----------------------------------|--------|----|
| | 3)7230 | 15 |
| | 2410 | 5 |
| For the last drawn Ticket deduct | 500 | 0 |
| | 1910 | 5 |

So that the real Profit upon selling 3000 war-
ranted Tickets, amounts to 1910^l 5^s. In the In-
vestigation of these Numbers, Care has been taken
to make Allowance for the probable Difference
between 12^l. 10^s. and the Price originally given
for the Tickets by the Proprietors of the *Molef-
worthean* Lottery Offices, otherwise their Profits
would have been much greater than as they appear
above.

F I N I S,

